## Amendments to the Claims:

1. **(Currently Amended)**    A method for determining a bandwidth required for meeting one or more quality-of-service ("QoS") criterion on a transmission link comprising the steps of:

generating a plurality of streams of traffic for the transmission link;

5        conducting a plurality of simulations of bandwidth for the link, based on generated traffic streams and using systematically varying values of the one or more QoS criterion;

developing a <u>statistical</u> model <u>of the transmission link based on the simulations,</u> ~~addressed to a relationship between~~ <u>the statistical model specifying a</u> bandwidth <u>requirement for achieving at least one of the</u> ~~and the one or more~~ QoS criterion <u>as a</u>

10   <u>function of bandwidth, traffic load, queuing delay and packet loss, the model further</u> <u>specifying a link utilization ($u$), defined as a ratio of traffic load ($\tau$) on the link to link</u> <u>bandwidth ($\beta$) ($u = \tau/\beta$), as an algebraic function of queuing delay ($\delta$) and delay probability</u> <u>($\omega$)</u>~~based on the simulations~~; and

applying the developed model to determine bandwidth required to meet the one or

15   more QoS criterion on a link

~~wherein the developed model is provided as a function of bandwidth, traffic load,~~ ~~queuing delay and packet loss~~.

2. **(Original)**  The method of claim 1 wherein each of the generated traffic streams has a fixed traffic bit rate and the traffic bit rate varies from stream to stream.

3. **(Original)**  The method of claim 1 wherein the streams of traffic are organized into packets and the traffic streams are defined by packet arrivals and sizes.

4. **(Original)**  The method of claim 1 wherein the traffic streams are generated synthetically based on a statistical model.

5. **(Original)**  The method of claim 4 wherein the statistical model is a Fractional Sum Difference model.

6. **(Original)** The method of claim 1 wherein the step of conducting plural simulations includes the sub-steps of:

choosing a trial bandwidth for a given simulation; and

iteratively repeating the simulation with an incremental change in the trial

5 bandwidth until a QoS value realized for the simulation substantially matches a selected QoS criterion.

7. **(Previously Presented)** A method for determining a bandwidth required for meeting one or more quality-of-service ("QoS") criterion on a transmission link comprising the steps of:

generating a plurality of streams of traffic for the transmission link;

5 conducting a plurality of simulations of bandwidth for the link, based on generated traffic streams and using systematically varying values of the one or more QoS criterion;

developing a model addressed to a relationship between bandwidth and the one or more QoS criterion based on the simulations; and

applying the developed model to determine bandwidth required to meet the one or

10 more QoS criterion on a link;

wherein the developed model is of the form:

$$\log_2\left(\frac{u}{1-u}\right) = \mu + o_\delta \log_2(\delta) + o_\omega(-\log_2(-\log_2(\omega))) + \epsilon,$$

where $u$ is the QoS utilization, $\delta$ is the queuing delay, $\omega$ is the delay probability, $\epsilon$ is a random variable with mean 0 and variance $\sigma^2(\epsilon)$, $\mu$ is a constant for a given traffic

15 stream, serving as a summary of the statistical properties of the stream, and $o_\delta$ and $o_\omega$ are empirically determined constants.

8. **(Original)** The developed model of the form claimed in claim 7 wherein:

$$o_\delta \cong 0.379, \ o_\omega \cong 0.863 \text{ and } \sigma^2(\epsilon) \cong 0.113$$

9. **(Original)** The developed model of the form claimed in claim 7 wherein:

$$\mu = o + o_\tau(\log_2(\tau) - 24) + \zeta$$

where $\zeta$ is a random variable with mean 0 and variance $\sigma^2(\zeta)$ and $o$ and $o_\tau$ are empirically determined constants.

10. **(Original)** The developed model of the form claimed in claim 9 wherein:

$o \cong 5.500, \; o_\tau \cong 0.709 \text{ and } \sigma^2(\zeta) \cong 0.036$

11. **(Previously Presented)** A method for determining a bandwidth required for meeting one or more quality-of-service ("QoS") criterion on a transmission link comprising the steps of:

generating a plurality of streams of traffic for the transmission link;

5           conducting a plurality of simulations of bandwidth for the link, based on generated traffic streams and using systematically varying values of the one or more QoS criterion;

developing a model addressed to a relationship between bandwidth and the one or more QoS criterion based on the simulations; and

applying the developed model to determine bandwidth required to meet the one or 10   more QoS criterion on a link;

wherein the developed model is of the form:

$$\text{logit}_2(u) = o + o_\tau \tau + o_\delta \log_2(\delta) + o_\omega(-\log_2(-\log_2(\omega))) + \psi,$$

where $u$ is the QoS utilization, $\tau$ is the link bit rate, $\delta$ is the queuing delay, $\omega$ is the delay probability, $\psi = \epsilon + \zeta$ is a normal random variable with mean 0 and variance

15   $\sigma^2(\psi) = \sigma^2(\epsilon) + \sigma^2(\zeta)$ and $o, o_\tau, o_\delta$ and $o_\omega$ are empirically determined constants.

12. **(Original)** The developed model of the form claimed in claim 11 wherein:

$o \cong 5.500, \; o_\tau \cong 0.709, \; o_\delta \cong 0.379, \; o_\omega \cong 0.863 \text{ and } \sigma^2(\psi) \cong 0.119.$

13 - 18 **(Cancelled)**